
SYOK KARDIOGENIK

Ninuk Dian K

Dosen Fakultas Keperawatan Unair: Gadar, Kritis, Bencana

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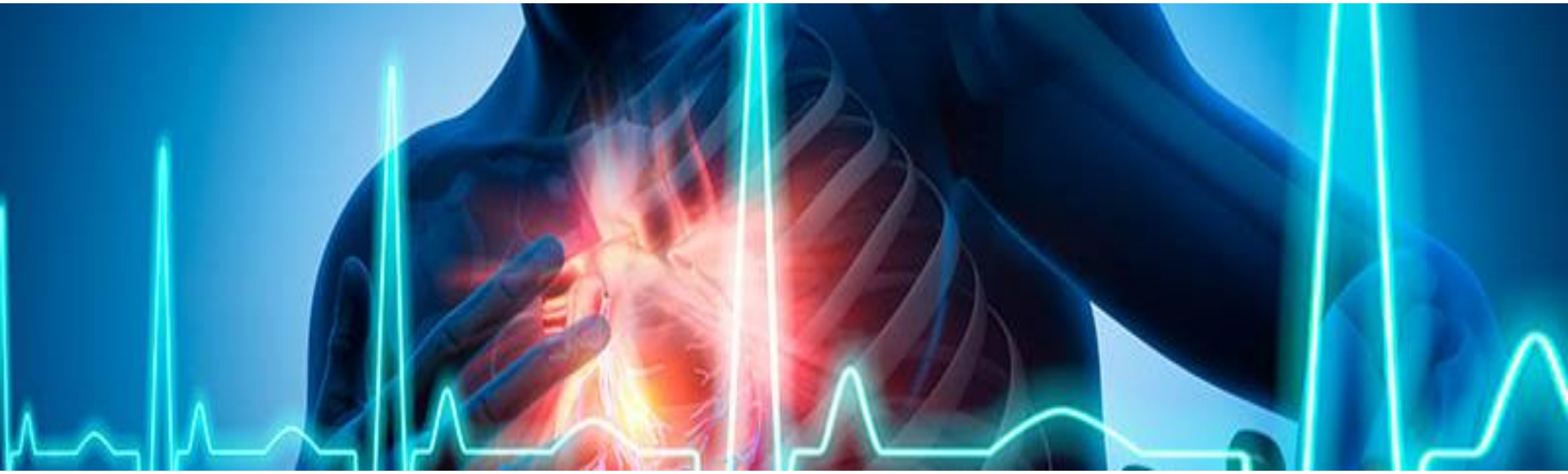
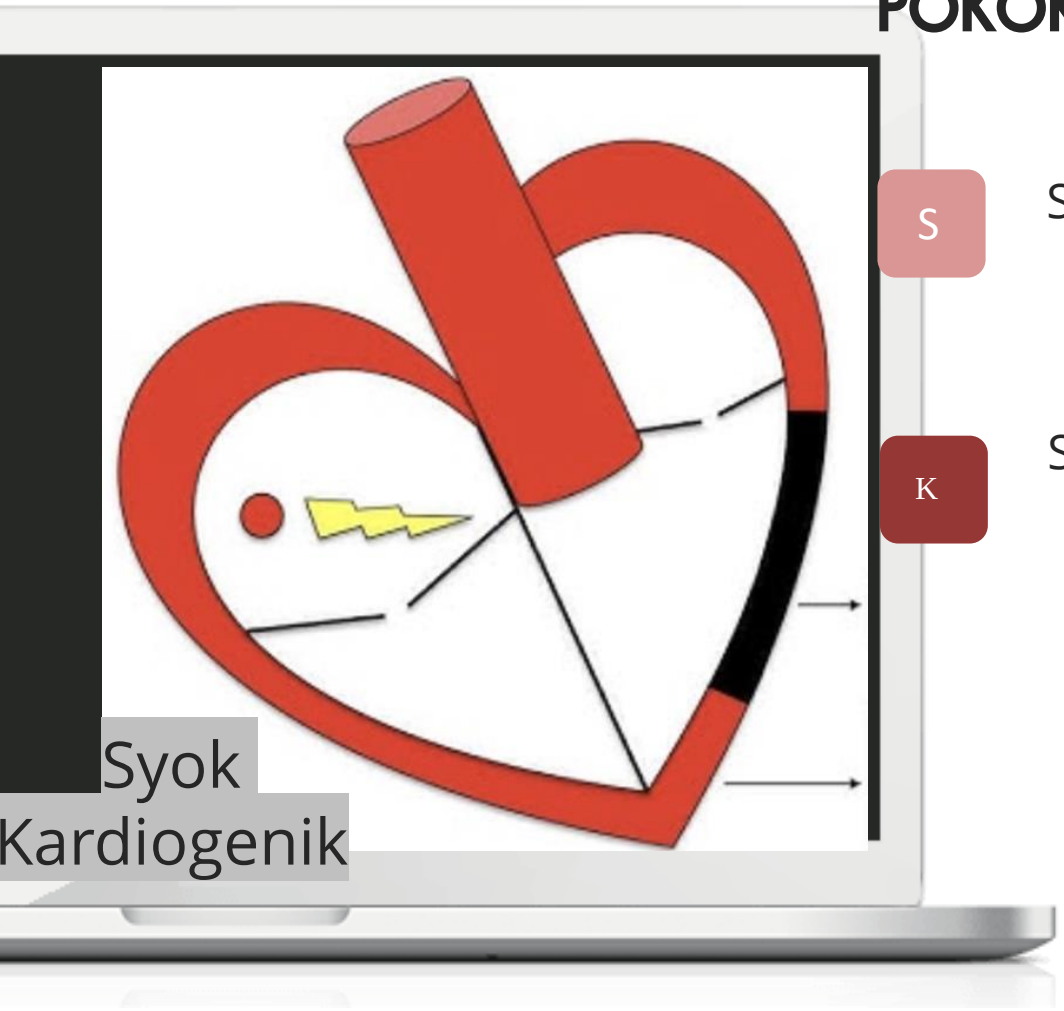


Setelah mengikuti perkuliahan ini peserta pelatihan micro credential akan mampu menjelaskan konsep syok kardiogenik

POKOK BAHASAN

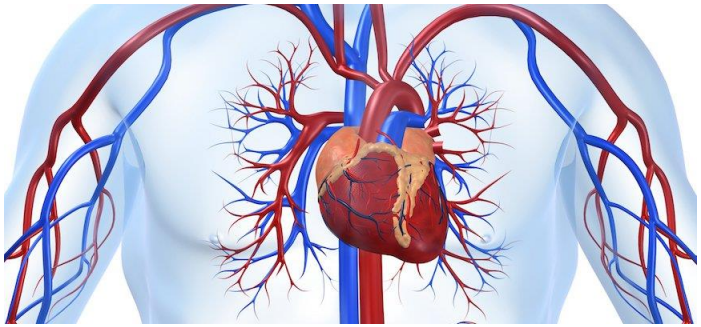


Syok Kardiogenik

S Syok

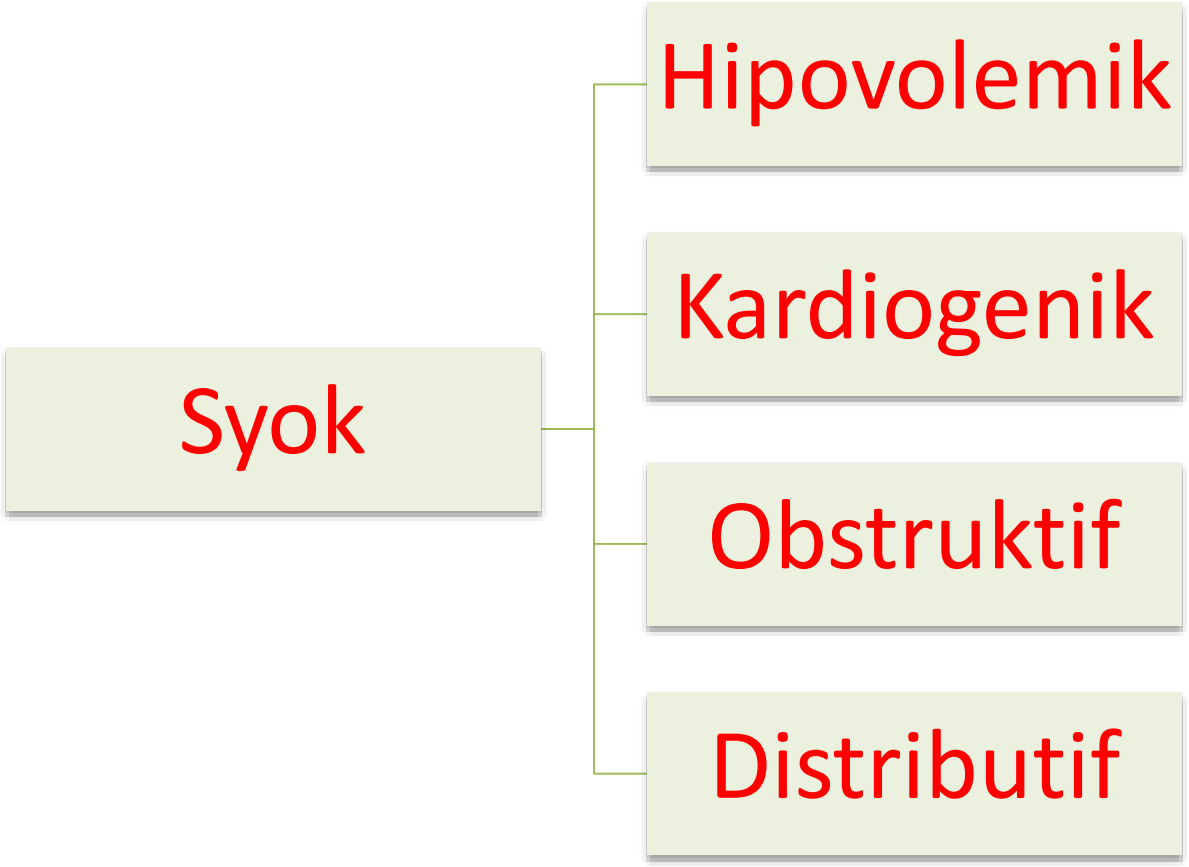
K Syok Kardiogenik

SYOK
Definisi

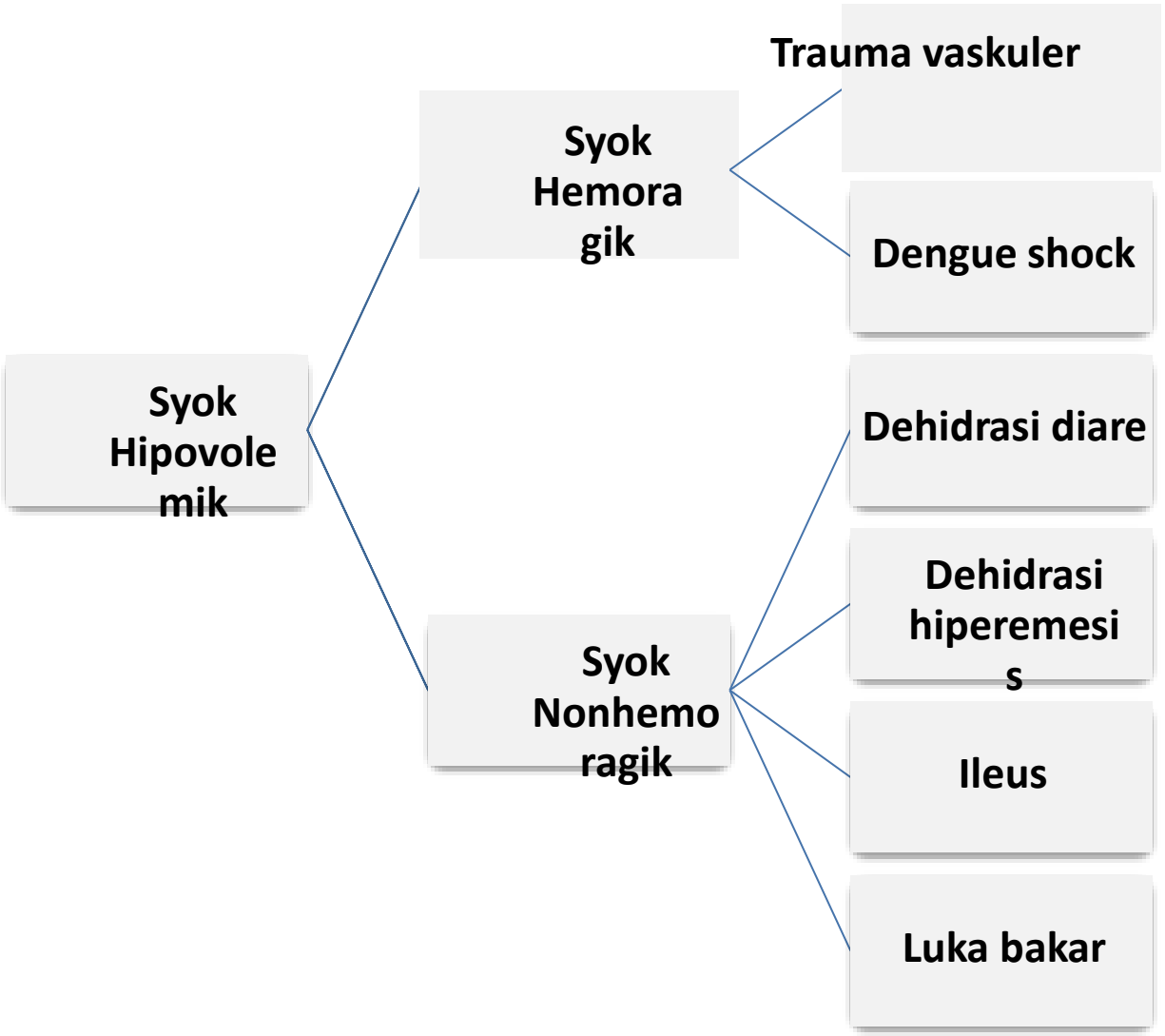


- **Aliran darah yang tidak Adekuat untuk memenuhi Kebutuhan Jaringan**
- **Gangguan perfusi & oksigenasi jaringan akibat gangguan sirkulasi.**

Klasifikasi Syok dari Hinshaw dan Cox

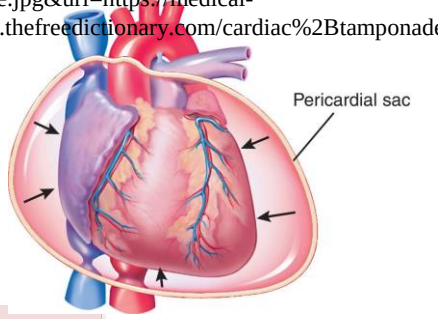


Syok Hipovolemik

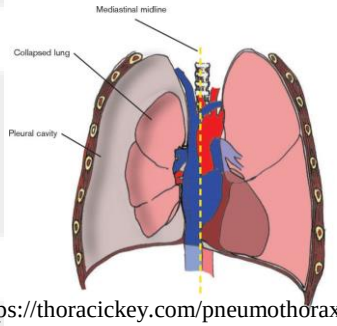


Syok Obstruktif

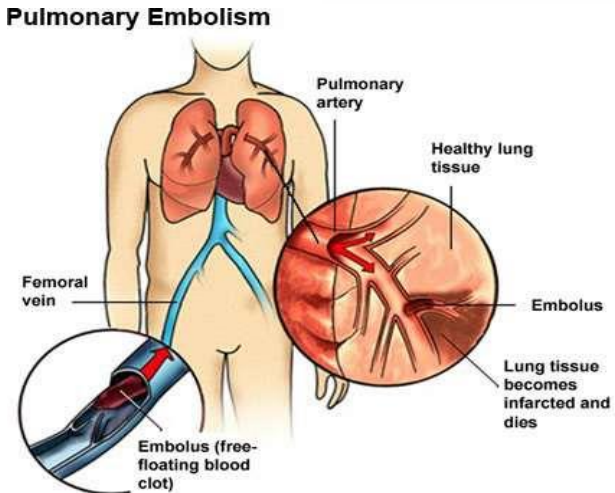
http://medical-dictionary.thefreedictionary.com/_/viewer.aspx?path=MosbyMD&name=cardiac-tamponade.jpg&url=https://medical-dictionary.thefreedictionary.com/cardiac%2Btamponade



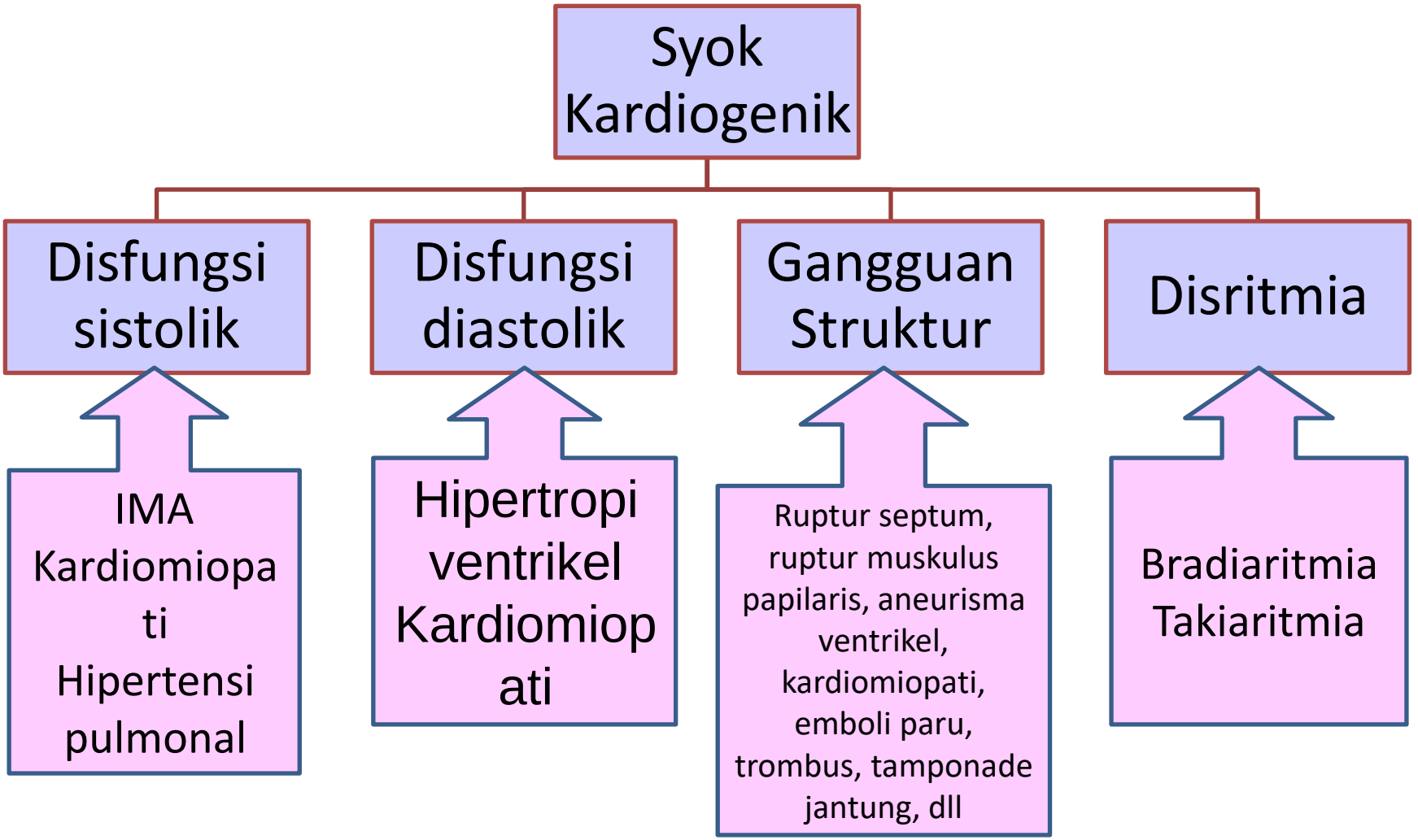
- Syok Obstruktif
  - Tamponade Cordis
  - Tension Pneumothoraks
  - Emboli Pulmonal
  - Compartment Syndrome

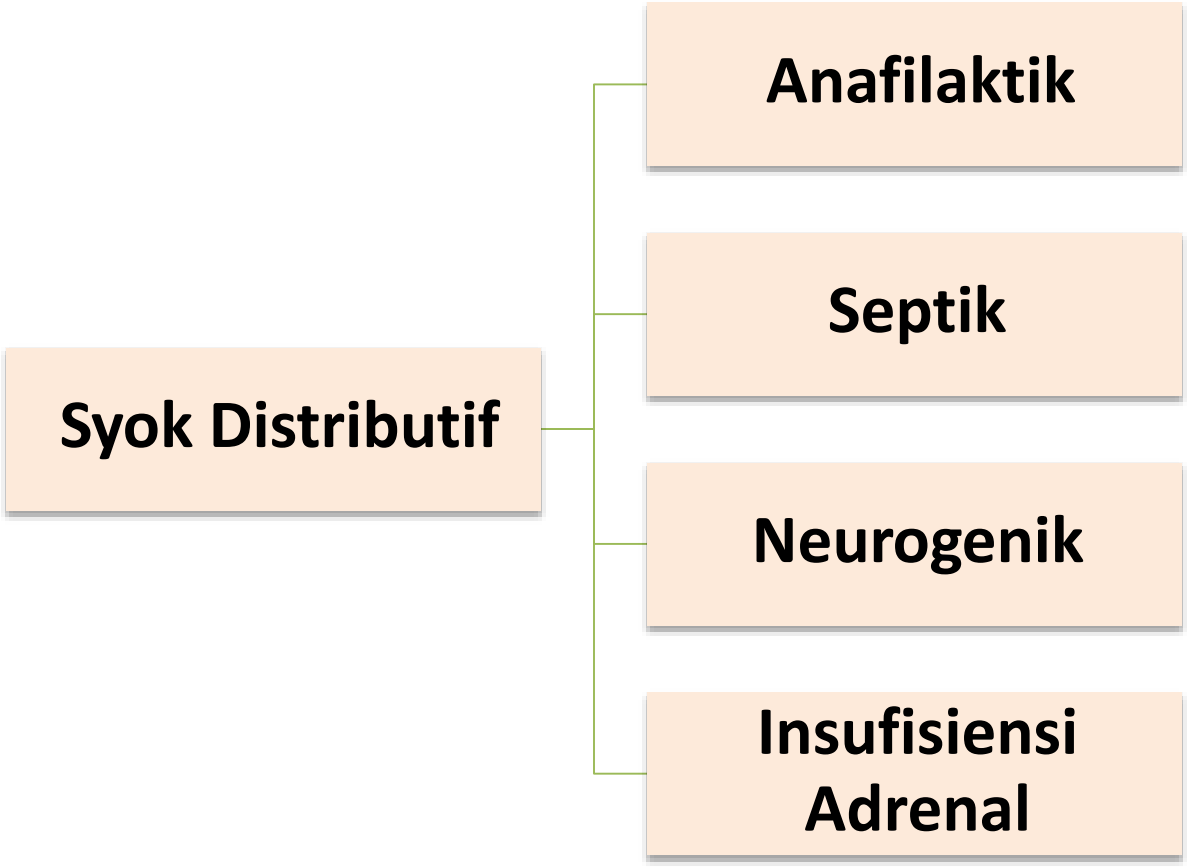


https://thoracickey.com/pneumothorax-9/

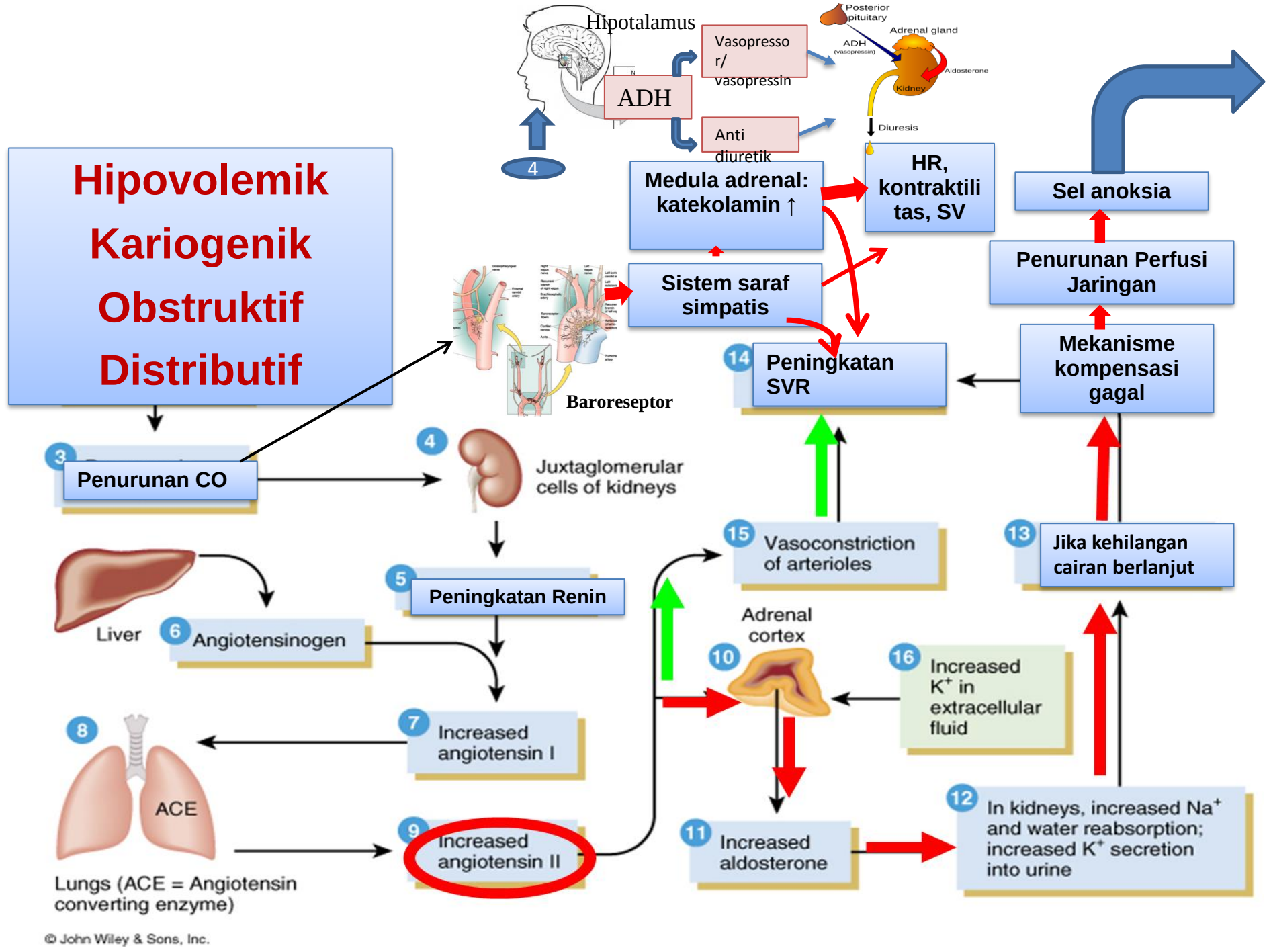


Syok Kardiogenik




Syok Distributif
Anafilaktik
Septik
Neurogenik
Insufisiensi Adrenal

Patofisiologi Syok


Hipotalamus
ADH
Vasopresso r/ vasopressin
Anti diuretik
Posterior pituitary
ADH (vasopressin)
Adrenal gland
Aldosterone
Kidney
Diuresis
4
Hipovolemik
Kariogenik
Obstruktif
Distributif
Medula adrenal: katekolamin ↑
HR, kontraktili tas, SV
Sel anoksia
Penurunan Perfusi Jaringan
Sistem saraf simpatis
Baroreseptor
Mekanisme kompensasi gagal
14 Peningkatan SVR
3 Penurunan CO
4 Juxtaglomerular cells of kidneys
15 Vasoconstriction of arterioles
13 Jika kehilangan cairan berlanjut
5 Peningkatan Renin
Liver
6 Angiotensinogen
Adrenal cortex
10
16 Increased K^+ in extracellular fluid
8
7 Increased angiotensin I
ACE
9 Increased angiotensin II
11 Increased aldosterone
12 In kidneys, increased Na^+ and water reabsorption; increased K^+ secretion into urine
Lungs (ACE = Angiotensin converting enzyme)
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Sel Anoksia

⇓

Metabolisme bergeser dr Aerob ke anaerob

↓

Produksi asam laktat

↓

Fungsi sel berhenti dan udem

↓

Permeabilitas vaskular meningkat

↓

Electrolit dan cairan keluar sel

↓

gangguan pump Na+/K+

Kerusakan mitokondria
Kematian sel
MODS

Cardiogenic Shock: *Pathogenesis, complications and clinical findings*

Author:
Dean Percy
Reviewers:
Yan Yu
Tristan Jones
Jason Waechter*
** MD at time of publication*

Cardiac Arrhythmia*
- Severe bradycardia → **↓ Heart rate (HR)**
- Severe tachycardia → ↓ diastolic time → ↓ time for L ventricle to fill

Cardiac Valve dysfunction*
- Valvular *regurgitation* → In systole, some blood goes backward
- Valvular *stenosis* → Forward flow of blood is obstructed

Cardiomyopathy*
- Hypertrophic cardiomyopathy → ↓ Cardiac contractility (less blood is pushed forward when ventricles contract
- Myocyte dysfunction or loss → ↓ Cardiac contractility (less blood is pushed forward when ventricles contract

Myocardial infarction*
- Death of cardiac muscle → ↓ Cardiac contractility (less blood is pushed forward when ventricles contract

↓ Heart rate (HR) + **↓"Forward" Stroke Volume (SV)** → **Low cardiac output → Cardiogenic shock!** ***(Think: CO = SV x HR)***

Low cardiac output → Cardiogenic shock! ***(Think: CO = SV x HR)***
- Build-up of blood (and thus pressure) in the venous system
  - Blood from right ventricle backs up into right atrium and SVC → **↑ JVP, Distended neck veins** → ↑ Hydrostatic pressure in peripheral veins → fluid pushed out of veins → **Peripheral edema**
  - Blood from left ventricle backs up into lungs → **↑ Pulmonary BP *(pulmonary capillary wedge pressure)*** → **Pulmonary Edema*** → **Dyspnea, Tachypnea**
- BP = CO x SVR; less 'flow' in vessels (CO) will lower BP → **↓ Blood Pressure**
- Heart tries to compensate by ↑ HR → **Tachycardia**
- Insufficient organ perfusion → **Skin**
  - Body preferentially vasoconstricts extremities, to preserve blood/warmth to key vital organs → **Cold, pale, or mottled extremities**
  - ↓ Arterial blood (red) and ↑ venous blood (blue) → **Cold, pale, or mottled extremities**
- Insufficient organ perfusion → **Brain** → ↓ cerebral blood flow → cerebral hypoxia → **Progressive ↓ LOC**
- Insufficient organ perfusion → **Heart** → ↓ Coronary perfusion
  - **PEA if severe**
  - **Myocardial ischemia**
- Insufficient organ perfusion → **Kidneys** → ↓ Blood flow to kidneys
  - ↓ GFR → **1. Oliguria** **2. ↑ Cr**
  - Renal ischemia → **ATN** → **1. Oliguria** **2. ↑ Cr**

cathecolamine

*See corresponding Calgary Guide slides for more details

Abbreviations:
ATN: acute tubular necrosis
JVP: Jugular venous pressure
LOC: level of consciousness
Cr: Creatinine
PEA: Pulseless Electrical Activity

Legend: Pathophysiology | Mechanism | Sign/Symptom/Lab Finding | Complications

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	JENIS SYOK			
	Hipovolemik	**Distributif**	**Kardiogenik**	**Obstruktif**
HR	Meningkat	Meningkat (Normal pada syok neurogenik)	Dapat meningkat atau menurun	Meningkat
JVP	Menurun	Menurun	Meningkat	Meningkat
TD	Menurun	Menurun	Menurun	Menurun
Kulit	Dingin	Hangat (Dingin pd syok berat)	Dingin	Dingin
CRT	Lambat	Lambat	Lambat	Lambat

Tahap Syok *(the stages of shock)*

Initial	Compensatory	Progressive	Refractory
• Metabolisme aerob → anaerob • ↑ kadar asam laktat • Perubahan tanda klinis blm tampak	• Saraf simpatis menstimulasi : • ↑ pelepasan katekolamin • Kontraktilitas jantung • Respons neurohormonal: vasokonstriksi & aliran darah prioritas ke organ vital • Pelepasan aldosteron: ↓ output urin (<30 menit) • ↑ frekuensi jantung • ↑ kadar glukosa	• Imbalans elektrolit • Asidosis metabolik • Asidosis respiratorik • Edema perifer • Takiaritmia ireguler • Hipotensi • Pucat • Kulit dingin • Penurunan tingkat kesadaran	• Kerusakan ireversibel sel dan organ • Kematian

SIGNS OF SHOCK

↓ In MAP (Mean Arterial Pressure)

EARLY SIGNS

Map ↓10mmHg from Baseline

Effective Compensation

O_2 → Vital Organs

↑ Heart Rate

COMPENSATORY SIGNS
(NON PROGRESSIVE)

MAP ↓ 10-15mmHg from Baseline

↑ Renin ↑ ADH

Vasoconstriction

↓ Pulse Pressure

↑ Heart Rate

↓ pH

Restless

Apprehensive

PROGRESSIVE SIGNS
(INTERMEDIATE)

MAP ↓ 20mmHg from Baseline

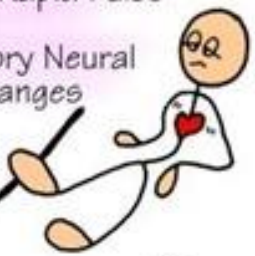
Tissue / Organ Hypoxia

↓ Urine (Oliguria)

Weak Rapid Pulse

↓ pH

Sensory Neural Changes

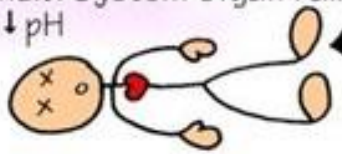


REFRACTORY SIGNS
(IRREVERSIBLE)

Excessive Cell/Organ Damage

Multi System Organ Failure

↓ pH




thank you
danke
謝謝
ngiyabonga
teşekkür ederim
gracias
merci
obrigado
dziękuję
bedankt
go raibh maith agat
sukriya
kop khun krap
terima kasih
dakujem
arigatô
grazie
tapadh leat
mochchakkeram
спасибо
рахмат
Баярлалаа
dank je
misaotra
matondo
paldies
grazzi
mahalo
хвала
asante
manana
obrigada
tenki
chokrane
murakoze
mamnun
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sulpáy
taiku
takk
trugarez
мерси
shukriya
merce
dhanyavadagalu
diolch
ευχαριστώ
xièxie
감사합니다
তোমাকে ধন্যবাদ
kam sah hamnida
rahmat
rahmet
tanemirt
najis tuke
didi madloba
ありがとう
mèsi
sobodi
děkuji
sagolun
enkosi
bayarlalaa
gràcie
hvala
mauruuru
köszönöm
dhanyavad
nandri
nanni
kiitos
dankie
faafetai lava
спасибі
blagodaram
vinaka
barka
welalin
tack
spas
kia ora
mersi


thank you